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DRAWINGS ATTACHED

1 253 836

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(54) FORMING AND SEALING PACKAGES

(71) We, HOLSTEIN & KAPPERT MASCHINENFABRIK, PHÖNIX G.m.b.H., a German Company of 20 Juchoster, Dortmund, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to apparatus for producing substantially parallelepipedal packs filled with a fluid material, and is an improvement and/or modification of the apparatus described in Patent Specification No. 1,025,306.

In that specification, there is described a method and apparatus for producing parallelepipedal packs, filled with filling material having the ability to flow, from a continuous flexible tube without any preliminary impression of the tube in the region of the top and bottom of the packs to be formed and into which tube the filling material is introduced to a predetermined filling level, the individual packs being formed by lateral compression of oppositely disposed walls of the tube effected at intervals corresponding to the desired size of the packs and the production of transverse seams being carried out at the same time with subsequent parting of the packs in the central zone of the transverse seams. Such a method is referred to as a method of the kind stated.

According to claim 1 of Specification 1,025,306, there is provided a method of the kind stated characterised in that the flexible tube is gripped, below said predetermined level, over its entire periphery by shaping cells exerting a frictional contact on the filled tube and shaping the filled tube into packs each having a rectangular cross-section, the shaping cells causing the tube to be moved along continuously in the course of the shaping of the packs into an exact parallelepipedal form and the formation of the transverse seams, no relative movement occurring between the material of the flexible tube and the shaping cells whilst gripped by the shaping cells and no relative movement occurring between the material of the flexible tube and the means of forming the lateral compression of oppositely disposed walls during such compression.

According to the present invention there is provided apparatus for carrying out the method of producing parallelepipedal packs as claimed in claim 1 of Patent Specification No. 1,025,306, said apparatus comprising a plurality of mold sets for embracing a filled tube at spaced positions along its longitudinal axis, each set comprising two mold elements movable towards each other to frictionally engage opposite sides of the tube, a pair of jaws disposed on opposite sides of the tube axis and between adjacent mold sets, said jaws being movable toward each other to form the transverse seams and to cut the tube in the central zone of the transverse seams, and means connecting together adjacent mold sets and the jaws to constitute a pair of endless chains and to enable the jaws to be moved toward each other with the tube-engaging end faces of the jaws maintained generally parallel to each other, to the tube engaging faces of the mold elements and to the tube axis, the movement of the jaws towards each other being associated with a corresponding reduction of the distance between adjacent mold sets.

In the preferred arrangement of the invention, the apparatus includes two main continuous chain conveyors which carry mold halves at spaced intervals along the length thereof and which include conveyor portions extending in paths on each side of the filled tube so that the mold element of one conveyor system is moved into engagement with an opposite conveyor mold element over the centrally positioned continuous tube length. Between each mold element

[Price 25p]

on each chain conveyor there is located a pivotal folding and sealing bar member. Means are provided along the conveyor length for shortening the distance between successively fed sets of mold elements which engage around the central tube and for simultaneously causing the infeed of the folding bar member to cause the walls of the tube to be moved inwardly to form a flat sealing edge. The length of each container which is formed is determined by the length of the wall of the mold cell of each mold set. The spacing between successive mold elements is such initially that the folding bar member may easily move over the surface of the tubes between adjacent mold sets and gradually fold the walls inwardly as the distance between successive mold sets is gradually shortened. In order to assure an even infeeding of the folding bar elements as the distances between the mold sets are shortened, linkages are associated with the folding bar element and the connecting sets of mold elements to insure that the shortening of the distance and the infeeding of the molding bar is accomplished gradually and simultaneously. In this manner the containers are formed into exact parallelepipeds.

In a preferred embodiment of the invention, successive mold-forming elements on each chain conveyor are articulated together by means of hinge connecting bars or links which fold inwardly as successive mold elements of the chain conveyors are moved gradually together. Guide means are provided for also moving the folding bars inwardly gradually at the same time as the spacing between mold sets is reduced until only a small space remains between the opposite wall elements of the filled central tube which may thereafter be sealed together and severed. In this construction, the hinge pins of the linkage between rectangular trough-shaped cell halves may be arranged outside the folding planes of the tube wall material and thus the feeding of the mold halves and the actuation of the infolding bars may be accomplished in a simple and easy manner.

The jaws may be articulated through a linkage to the outer ends of the individual cell units of each conveyor system. The end faces of the folding jaws face the central tube and are disposed in a plane intermediate the cell-forming mold elements of the cooperating chain conveyors. The movement of these jaws may be controlled such that the distance between opposite faces of each jaw set may be shortened with a corresponding shortening of the distance between adjacent cell units. Although the filled tube is not covered and thus not supported during the initial covering of the tube adjacent the end faces of the container material by the mold cell parts, it has been found that an absolutely sharp folding with an exact parallelepipedal form can be obtained with such an apparatus because of the internal pressure prevailing in the tube and also because the mold jaw edges are moved during the folding relatively to the tube wall exactly in a circular arc about the associated tube wall as the distance between the mold-forming sets of elements is shortened. Since there is no relative movement during the entire molding process between the tube or the container material forming the tube in the mold cell parts, there can be no elongation or buckling. It is particularly advantageous to mount each jaw on an end portion of the mold element using links of a length selected equal to half the length of the pack being formed. This ensures that the distance between associated cell edges or pack edges and mold jaws remains constant during the inward movement of the jaws. In the preferred arrangement, links are connected to the jaws to form a parallelogram linkage providing a satisfactory translatory movement of the folding jaw to effect the end sealing edge formation.

The jaws are advantageously mounted so that they do not move completely together permitting the liquid material in the tube to remain in communication with adjacent molded container elements which are subsequently sealed by a die arranged in the jaw by the actuation of the jaws through pressing elements arranged alongside the conveyors. In addition, a severing blade is mounted in the jaw which is actuated after the welding of the seam between successive container elements or packings is accomplished.

The invention provides a container-filling, forming and separating apparatus which is simple in design, rugged in construction and economical to manufacture.

In order that the invention may be clearly understood reference will now be made to the accompanying drawings in which:—

Figure 1 is a schematic side-elevational view of an apparatus in accordance with the invention for forming individual liquid-filled containers from a continuous tube filled with liquid;

Figure 2 is an enlarged partial elevational and partial sectional view of a portion of the mechanism illustrated in Figure 1;

Figure 3 is a view similar to Figure 2 but of another portion of the mechanism indicating the control elements for effecting the in-folding of the tube wall portions as the mold sets are moved gradually together; and

Figure 4 shows a cross-section of a conveyor system having two juxtaposed mold cells which are simultaneously fed around tubes filled with liquid.

Referring now to the drawings, the invention embodied therein as indicated in

Figure 1 includes an apparatus for operating on a tube 1 of a suitable material such as plastics or metal foil, which is filled up to a predetermined and constant level with a liquid 1*a* to be packaged into individual packs or containers. Tube 1 is located between two sets of conveyors generally designated 60 and 62. The conveyors 60 and 62 each include mold half elements 2 which are pivotally connected on a pivot shaft 7 at fixed spaced locations on endless chains 60*a* and 62*a* which are formed of the elements 2 and a connecting linkage and trained to run around wheels or sprockets 4. Each half mold element 2 includes an end face 2*a* having a trough-shaped cavity or cell face defined therein which is engaged around the tube 1 as the mold elements 2 are moved downwardly on opposite sides of the tube 1 along central reaches of the conveyors 60 and 62.

As best indicated in Figure 2, a link 5 is pivotally connected to the hinge shaft 7 and to a similar hinge shaft 6 and to an intermediate link 5*a* which connects a link 5^1 hinged to a shaft 7^1 at the upper end of the next adjacent half mold element 2 of each conveyor. The outer edge of each mold-forming element 2 includes an upper projection 2*b* on which is pivotally mounted a link member 8 at a pivot pin connection 8^1. The outer end of the link member is pivoted at 8*a* to a sealing and severing jaw generally designated 3. The distance between the centres of the hinge shafts 6 and 7, and also the distances between the adjacent hinge shafts 7^1 and 6^1, correspond to half the width of the container to be formed and half the depth of the mold cell cavity in the mold cell half elements 2. The link 8 is substantially the same length as the link 5 so that a parallelogram four-link chain is formed by the jaw 3, one mold cell half element 2 and the guide links 5 and 8. Jaw 3 is supported by and connected to link 5*a* so that the upper and lower edges indicated 9 of the jaw extend substantially perpendicularly outwardly from the outer surface of the tube 1 when the flat end of the jaw engages the tube. The flat end and upper and lower edges of the jaw describe circular arcs with respect to end surfaces 10 of the mold element 2, when the mold sets comprising two mating elements 2 of opposite conveyors are moved together. During such movement, the end faces of each pair of jaws are maintained generally parallel to each other to the tube axis, and to the cell end faces 2*a*. Such arcs are described as a jaw 3 is moved inwardly, and the adjacent mold sets generally designated A, B, C and D in Figure 2, are moved from the separated position as shown between the mold sets A and B to the closely spaced position indicated between the mold sets B, C and D, in which position each jaw is located closely adjacent end surfaces 10 of adjacent mold elements. The inward movement of the jaws 3 is effected by control cams which will be described more fully hereinafter in respect to the showing of Figure 3.

The feeding movement of the tube 1 is effected in a downward direction by the movement of the conveyors 60 and 62 to cause each mold half element 2 to engage on respective opposite sides of the tube 1. There is a frictional restraint, between the mold cell parts of each conveyor and the tube wall, caused by the internal pressure of the fluid in the wall so that no tensile forces are exerted on the tube at the start of the formation of the head and bottom seals which will be effected by the jaws 3. The movement of the molds together and their downward movement and the movement of adjacent mold sets A and B etc. gradually together is controlled so that there will be no undesired stresses on the tube material. The tube material will hug the interior of the mold parts in any position of the mold parts 2 so that an extremely sharp folding is obtained while still protecting the tube material. It has been found that the fact that the upper end of the tube is unsupported between the cell halves 2 and the jaws 3 upon initial engagement of the mold elements 2 at the upper ends of the conveyors has no effects on the tube material even when thin tubing material is employed.

When the jaws 3 are moved inwardly to the closed position which will be accomplished when the link 5*a* is moved parallely inwardly and the links 5 and 5^1 are oriented substantially horizontally, as indicated in dotted lines at the positions between B and C and C and D, there will be a small gap 11 between the jaws 3 and the material of the tube 1. This makes it possible for the liquid from the container which is being formed in the lower mold set C to escape upwardly into the upper mold set B to insure an exact shaping of the size of the container to be formed and the exact filling thereof. The gap 11 is closed during the production of the transverse seams by sealing means which are arranged in the jaws 3. One of the jaws 3 includes a heat sealing die 12 which is substantially fixed or which can be adjusted by an adjusting screw 13. In the opposite jaw 3 there is arranged a complementary die 14 which is moved outwardly by means of a plunger 15 in the direction of die 12 when the mold set C is moved downwardly to the position indicated by mold set D. The inward movement of the die 14 toward the die 12 serves to close the free gap 11 and to apply the necessary sealing pressure.

In the die 14 there is also provided a cutting blade 16 which provides means for

cutting away the container, after it has been completely sealed, from the remaining portion of the tube 1. Means are provided to actuate the cutting blade 16 to cause it to move outwardly into a recess 17 provided in the opposite fixed die 12. Normally the blade 16 is held in a retracted position by a spring 19 surrounding an operating pin 18. The pin 18 is operated by means of a stationary cam device arranged in the path of the conveyor which will be described more fully hereinafter.

As indicated in Figure 1, when the mold halves 2, meet in the range of the upper wheels 4, they combine to form a mold cell or set and the halves 2 are fixed together by a projection 45 of one mold element 2 which engages in a corresponding recess 45*a* in the other mold element 2.

The feed for the mold elements 2 which are contained on the chains 60*a* and 62*a* of the conveyors 60 and 62 may be solely by means of the action of driving conveyor chains 20 which are trained over vertically spaced wheels 64 and 66 arranged on each side of the upper portion of the central reaches of the conveyors 60 and 62. One of the wheels 64 or 66 of each set is advantageously connected to means such as a motor (not shown) for effecting the movement of the chain 20 and the rotation of the wheel 64 and 66. The chain 20 carries follower rollers 21 at fixed spaced locations arranged so that they will enter into recesses 22 formed on a side of each of the mold elements 2 and advance the mold element downwardly together with the tube 1. As best indicated in Figure 3, guide bars 23 extend downwardly on each side of the central reaches of the conveyors 60 and 62 and form outer guiding elements for rollers 24 which are rotatably mounted on the hinge shaft 7. In addition, stationary guide elements or rods 25 extend downwardly from a spaced location outside each respective bar 23 to form outer guiding limits for rollers 26 which are carried on the jaws 3. As can be seen in Figure 3, the lower ends 23*a* of the rod guide elements 23 are curved from the outside toward the inside to permit the roller 26 to move inwardly at this location. The rollers 26 move under a switching member 27 at the lower end of the channel formed between the rods 23 and 25 and ride on the surface 44 of the member 27 and then over a control cam element 28 so that they are moved, together with the jaws 3, inwardly.

A second set of driving chains 29 is mounted on sprocket members 68 and 70, one of which is driven by a motor (not shown), (see Figures 1 and 3). A plurality of followers 30 is carried at spaced intervals on the chains 29 which move downwardly alongside each of the sides of the mold parts 2, and the followers 30 engage into the associated recesses 22 and drive the combined mold parts or sets downwardly at a speed which is less than the speed of the first driving chain 20, with the reduction in speed corresponding to the reduction of the length of the mold cell units caused by the in-folding of the sidewalls by the jaws 3. The chains 29 also each carry a pressure element 31 and 32, respectively, for actuating the elements of the jaws 3. The pressure element 31 is associated with the fixed die 12 having a plunger 33*a* which is actuated through a spring 33 and which provides the sealing pressure. The pressure elements 31 and 32 are provided with rollers 35 which are guided along guide elements 34 and are directed inwardly under pressure against the jaws 3 to effect the sealing of the infolded material of the tube 1. The pressure element 32 acts on the moving die 14 through the thrust bolt 15 to close the initially opened gap 11, as indicated in Figure 2, and to apply the sealing pressure. The plungers 33*a* indicated in Figure 3 act directly on the jaws 3 having the fixed dies 12.

The operating pin 18 of the blade 16, as indicated in Figure 2, must be actuated during the movement of the chain 29, and this is effected by a rotating lever 36 which is rotatably mounted at a fixed location on a shaft 36*a* and carries a roller 37 which engages a head 38 of the pin 18. The operating head of the pin 18 is so rounded off and the lever arm 36 is so dimensioned that the roller 37 strikes the rounded head 38 in a starting position substantially at its centre, and in the severing state acts exactly on the centre of the head, so that no marked transverse stresses act on the operating pin 18.

The first guiding chains 20 were selected for constructional reasons so that the followers 21 of the latter run in a path intercepting the centre of the path of movement of the guide rollers 26 of the jaws 3. The switch 27 is arranged at the lower end of the path of the roller 26 confined between the plates 23 and 25 and it is urged by a tension spring 39 to rotate about a fixed pivot 40 into a position such that the tongue 41 of the switch 27 leaves the passage between the stationary guide 25 and the inner guide 23 during the passage of the roller 26. The switch 27 includes an operating arm portion 42 which is moved by each passing follower 21 so that the tongue 41 enters a recess 43 of the guide plate 25 to clear the passage between the plate 25 and the plate 23 for each roller 26. The passage is blocked, however, until the previous guide roller 26 of the mold elements 2 has passed this point. The respective roller 26 then moves against the shoulder 44 which acts to move the switch into the position shown in continuous lines in Figure 3 and also provides

a curved surface over which the roller 26 moves until it hits the control surface 28. The control surface 28 has a curvature adapted to the reduction of the velocity of the mold element 2 as it is moved downwardly towards the next lowermost cell element between the positions A and B, as indicated in Figure 3.

In some instances it is desirable to eliminate the switches 27, 27 in which case the driving chains which extend downwardly between the zones A and B are provided with recesses for engaging follower pins on the associated mold element parts 2.

In the embodiment illustrated and particularly shown in Figure 3, it is impossible in the range between the driving chains 29 and 20 to effect incorrect folding of the tube 1 between the mold cell elements 2. This is so because of the connecting links 5, 5*a* and 5[1] and the links supporting the jaws 3 which provide for the proper shortening of the space between adjacent mold element assemblies as the assembly in the position A in Figure 3 is moved downwardly while the assembly indicated at B is fed at a lower speed by the chain 29. The cell elements 2, 2 are held together by the guide rollers 24 which ride against the guide rod elements 23, and the movement of the jaws 3 is controlled by the movement of the rollers 26 which begin to move inwardly to engage the wall of the tube 1 during the transition of the assemblies from the position A to the position B.

A tensioning device is provided for the chains 60*a* and 62*a*, as indicated in Figure 1, for insuring a constant tensioning of the chains even after they have been worn. Each tensioning device includes a fixed guide 46 against which the rollers 24 of the mold half elements 2 bear. An elongated member 47 is articulated approximately in the centre of levers 48 which are pivoted on the fixed guide 46 at pivot points 49. A compression spring 50 engages each free end of the levers 48 to urge guide 47 toward fixed guide 46. Thus, the jaws 3 engaging guide 47 by means of their rollers 26 are urged toward guide 46; links 5*a* are also urged toward guide 46 to shorten the length of the chain until a sufficient tension has been obtained.

The arrangement and dimensioning of the guide rods 48 and the springs 50 is such that the axial load of the mold element chain remains substantially constant independent of the stroke of the moving guide 47. This is true because a substantially constant torque is exerted on the levers 48 even during relaxation of the springs 50 due to the increase of the active lever arm on the springs 50 in the particular arrangement. Thus, with a reduction of the active lever arm length acting on the moving guide 47 as a result of further deflection of the levers 48, the force exerted on the moving guide 47 is increased correspondingly. The axial force component in the chain between the elements 2 also remains substantially constant, independent of the degree of tension.

In the cross sectional representation the apparatus shown in Figure 4 advantageously includes a double mold set for operating on two tubes simultaneously. The arrangement of course can be formed with two or more cell elements 2, arranged side by side, as indicated. In the embodiment of Figure 4 the side walls are made slightly convex (not shown in Figure 4) in order to produce easy to grasp containers. Elastic sheets 51 are bent outwardly at the top and the bottom and may be adjusted by adjusting screws 52. The screws are advantageously provided with graduation marks, so that they can be set to given positions.

It is preferable to drive the lower set of wheels 4 of the conveyors 60 and 62 in order to permit the cell halves 2 to be detached uniformly at the lower end of the device in order to permit the separation of the completed container 80 (Figure 1). The second driving chains 29 need not be driven but can be designed as brake chains so that they provide a drag on the movement of the cell assemblies, thus providing the same shape-giving or shape-holding effect.

WHAT WE CLAIM IS:—

1. Apparatus for carrying out the method of producing parallelepipedal packs as claimed in claim 1 of Patent Specification No. 1,025,306, said apparatus comprising a plurality of mold sets for embracing a filled tube at spaced positions along its longitudinal axis, each set comprising two mold elements movable towards each other to frictionally engage opposite sides of the tube, a pair of jaws disposed on opposite sides of the tube axis and between adjacent mold sets, said jaws being movable toward each other to form the transverse seams and to cut the tube in the central zone of the transverse seams, and means connecting together adjacent mold sets and the jaws to constitute a pair of endless chains and to enable the jaws to be moved toward each other with the tube-engaging end faces of the jaws maintained generally parallel to each other, to the tube engaging faces of the mold elements and to the tube axis, the movement of the jaws towards each other being associated with a corresponding reduction of the distance between adjacent mold sets.

2. Apparatus according to claim 1 wherein said connecting means includes links pivotally connecting together each jaw to each of adjacent mold elements, the connecting means being such that during movement of the jaws toward each other, the end face of each jaw defines an arcuate path toward

a position in which the jaw is located closely adjacent the end faces of adjacent mold elements.

3. Apparatus according to claim 1, wherein links together with said mold elements form two separate endless chains, and wherein means are provided for mounting said endless chains with central reaches extending substantially vertically at a spacing from each other such that said mold elements of each conveyor are presented on each side of the filled tube positioned therebetween for movement into engagement therewith.

4. Apparatus according to claim 1, 2 or 3 and including means for effecting movement of the succession of mold sets to bring them in turn into contact with the tube to form a succession of containers.

5. Apparatus according to claim 4, wherein said means for effecting movement include means for driving said chains formed by said links and said mold elements.

6. Apparatus according to claim 4 or 5 wherein said means for effecting movement include conveyor means for directing said mold elements through paths on opposite sides of the tube which extend parallel to the tube and provide for a movement of said mold elements together into engagement around the tube.

7. Apparatus according to claim 4, 5 or 6, wherein said means for effecting movement include means for slowing the movement of sets of mold elements once engaged around a length of the tube so that any set and a following one engaged with the tube close up on one another to permit formation of the end walls by the jaws.

8. Apparatus according to claim 1, wherein each pair of jaws are pivotally connected to respective opposite elements of a mold set and are linked between adjacent sets of mold elements, said sets being movable toward and away from each other by pivotal movement of said linkage, inward movement of one set toward the other set causing inward movement of said first and second jaws to deflect opposite walls of the tube inwardly.

9. Apparatus according to claim 8, wherein each pair of jaws is pivotally mounted on links pivotally connected to outer ends of each respective element of said mold sets, said mold sets being interconnected by links which include links pivotally connected directly to each end of said mold sets and an intermediate link longer than the first mentioned links and connected between said first mentioned links of adjacent sets and connected to respective jaws.

10. Apparatus according to claim 4 as appendant to claim 1, wherein said connecting means include a parallel linkage connecting said respective jaws and respective adjacent mold elements, and wherein said means for effecting movement include means located along the path of movement of said mold sets for deflecting said jaws inwardly and simultaneously moving said mold sets together.

11. Apparatus according to claim 10, including a guiding channel disposed along a path of movement of said mold sets when they are moved together, each jaw including a roller element confined in a guide channel, said guide channel including a portion permitting inward movement of said roller elements to cause inward movement of each pair of jaws.

12. Apparatus according to claim 11, including a movable conveyor comprising a member engageable with each of said mold sets from opposite sides thereof for moving said mold set along a predetermined feed path, and means for guiding said mold sets for movement toward said conveyor permitting movement at a faster speed than by movement with said conveyor, and switch means between said guide means and said conveyor for regulating the feed of said mold sets to said conveyor.

13. Apparatus according to claim 1, wherein said means connecting together said mold sets include pivotal links, said mold sets with said pivotal links being formed into endless chains, and wherein there are provided guiding wheel means for guiding movement of said endless chains, said guiding means being arranged to permit downward movement of opposite associated elements of said mold sets through a path parallel to the axis of the filled tube, said mold sets being movable together on each side of said tube as they are moved alongside said tube frictionally to engage the tube, said mold elements engaging the tube at spaced locations along the length thereof, means disposed along the length of the path of movement of said endless chain in a direction parallel to the tube axis to cause inward feeding of said pairs of jaws to engage said tube from opposite sides and to deflect said walls inwardly, and including a movable conveyor having means engageable with said mold sets for advancing said mold sets at a speed slower than the initial speed with which they engage and travel with the tube to permit endwise movement of said adjacent mold sets toward each other and the simultaneous inward movement of said pairs of jaws, pressure means disposed along the path of said movable conveyor to cause pressing of said jaws together to effect sealing of the tube between the parts engaged by adjacent mold sets, and actuating means disposed along the path of movement of said movable conveyor for severing the sealed portion of the tube between adjacent mold sets to form individual packs.

14. Apparatus according to claim 13, wherein said pressure means includes a press member carried by said conveyor, and guide means for guiding said press member into pressing engagement with said first and second jaws.

15. Apparatus according to claim 13 or 14 and including means for cutting the tube to form individual packs, said means including a rotatable cam actuating member rotatably mounted adjacent said conveyor and movable to engage said jaws, said jaws including a knife member mounted in one of said pairs of jaws and a recess defined in an opposite jaw, said knife being movable into the recess to sever the material between the jaws when actuated by said actuating member.

16. Apparatus according to any one of claims 13 to 15, including means for spacing said mold elements apart as said endless chain is advanced and prior to the mold parts being presented on each side of the tube.

17. Apparatus according to any one of claims 13 to 16, including means for separating said pairs of jaws prior to the mold parts being presented on opposite sides of the tube.

18. Apparatus according to any one of claims 13 to 17, including a stationary guide member, each said mold part having a roller adapted to ride along a guide member, and resilient means disposed in the path of movement of said jaws for deflecting said jaws with the associated linkage for proper positioning of said mold elements in respect to each other and for proper positioning of said pairs of jaws.

19. Apparatus according to any one of the preceding claims, wherein said mold sets include two elements forming two cooperative mold cavities when interengaged for engaging around two separate tubes filled with the material to be packaged.

20. Apparatus according to claim 1, wherein said means interconnecting said mold sets include first and second links pivotally connected to adjacent mold elements, an intermediate link pivotally connected to the outer ends of said first and second links, a respective one of said pair of jaws being connected to said intermediate link, and a further link being pivotally connected to the outer end of a mold element and to said jaw member, each jaw being mounted with said further link and one of the first and second links forming part of a parallelogram linkage to permit inward movement of adjacent sets of said molds and simultaneous inward movement of said jaws, the length of the first and second links being equal to half the width of a pack.

21. Apparatus according to claim 20, wherein said links carrying said jaws are of a size such that said jaws will be spaced apart slightly when they are in opposed relationship prior to the sealing of the material therebetween so that the material filled in the tube may communicate between one mold set and the other prior to sealing.

22. Apparatus according to claim 1, wherein one of said pair of jaws includes a heat sealing die, the other of said jaws including a movable die and means for moving said movable die toward said heat-sealing die to effect sealing of the pack.

23. Apparatus according to claim 22, including a knife carried by said movable die, means mounting said knife for displacement in said movable die into and out of a recess defined in said fixed die.

24. Apparatus according to claim 4, wherein each of said mold elements includes a recess defined on the outer periphery thereof, said means for effecting movement including a member engageable in said recess for advancing said mold sets.

25. Apparatus according to claim 1, wherein said mold elements define a mold part cell, said cell being slightly convex.

26. Apparatus according to claim 25, wherein said mold elements include adjustable walls for adjusting to compensate for manufacturing tolerances and differences in thickness of the packing material.

27. Apparatus according to claim 26, including means for adjusting the walls of said mold elements.

28. Apparatus for producing parallelepipedal packs, substantially as herein described with reference to, and as illustrated in, the accompanying drawings.

HUGHES & YOUNG.

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Sheet 1

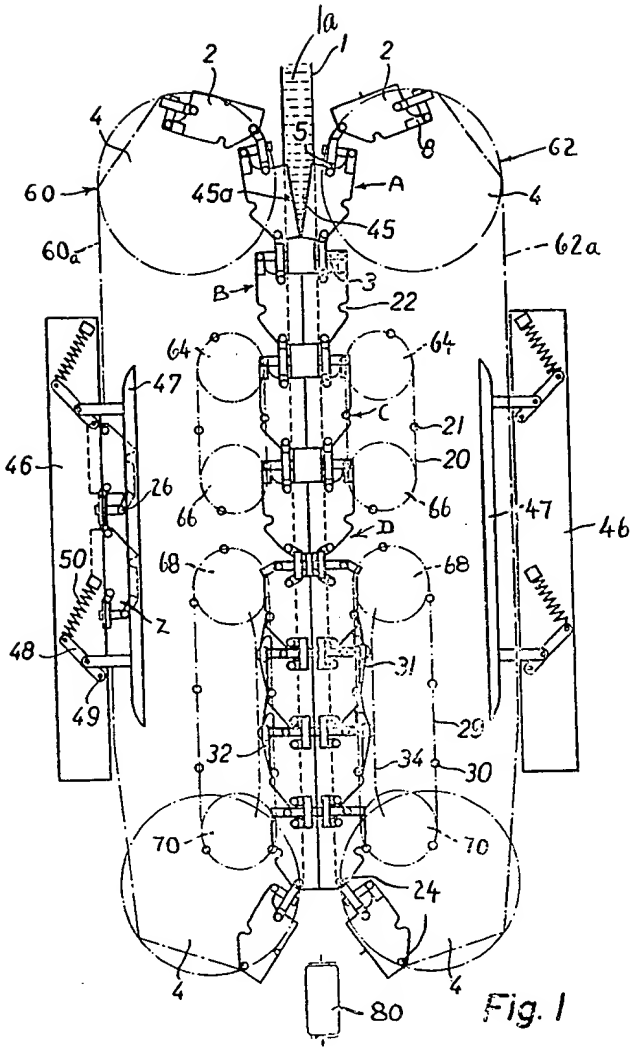

Fig. 1

1253836 COMPLETE SPECIFICATION
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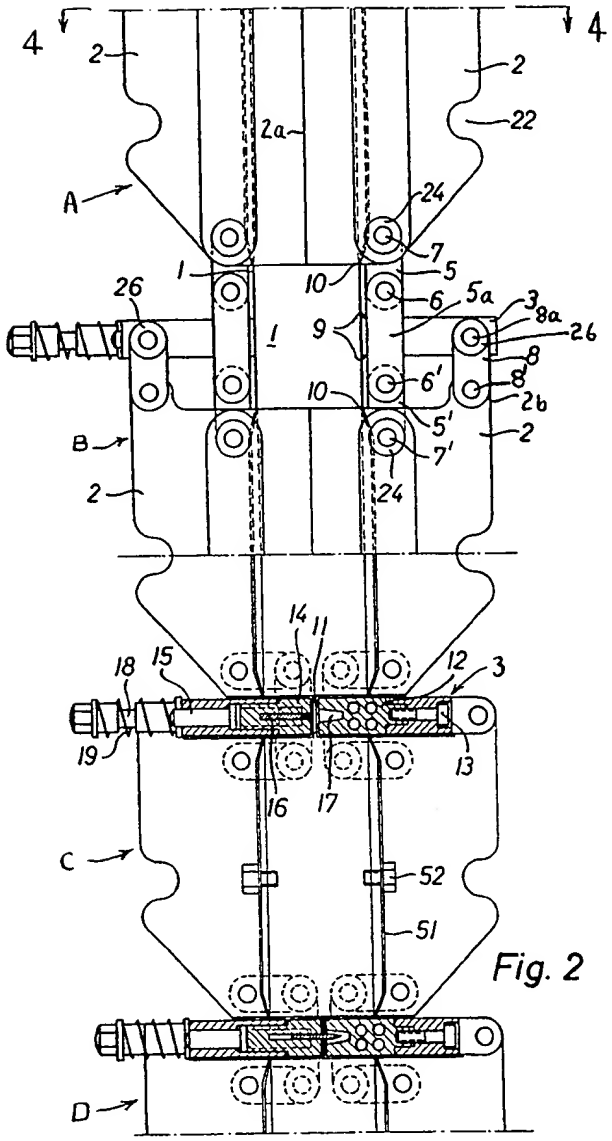

Fig. 2

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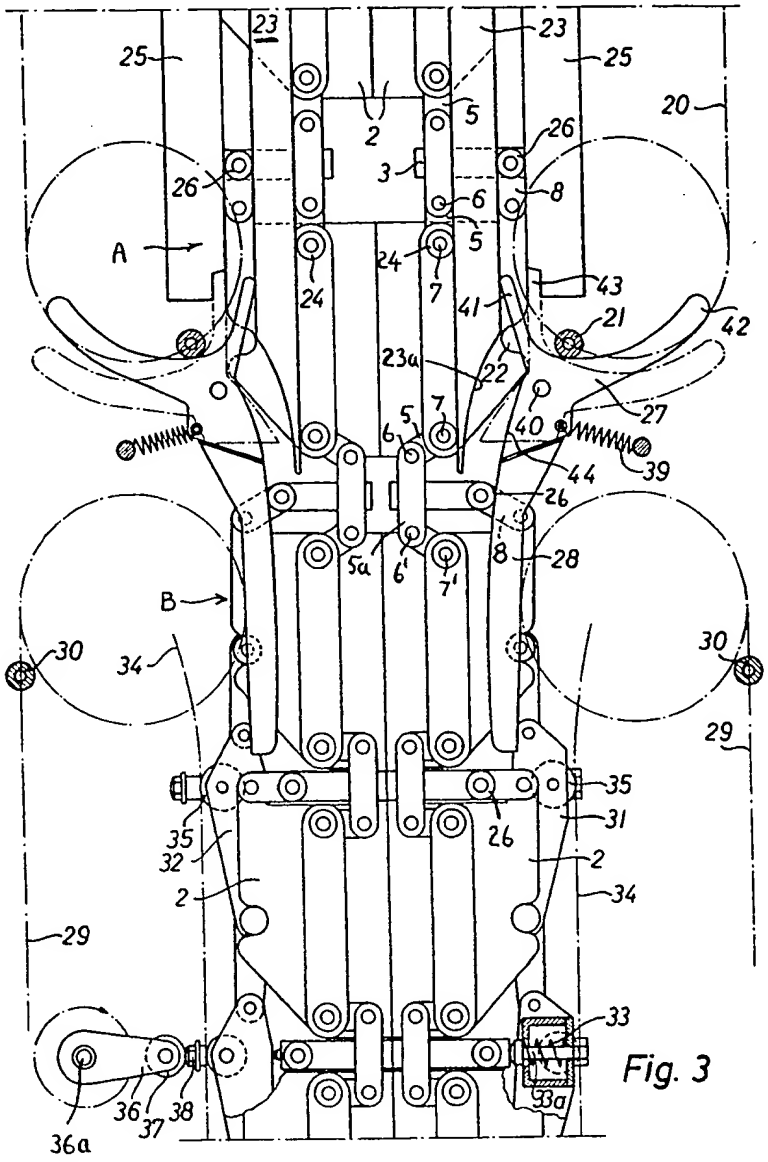

Fig. 3

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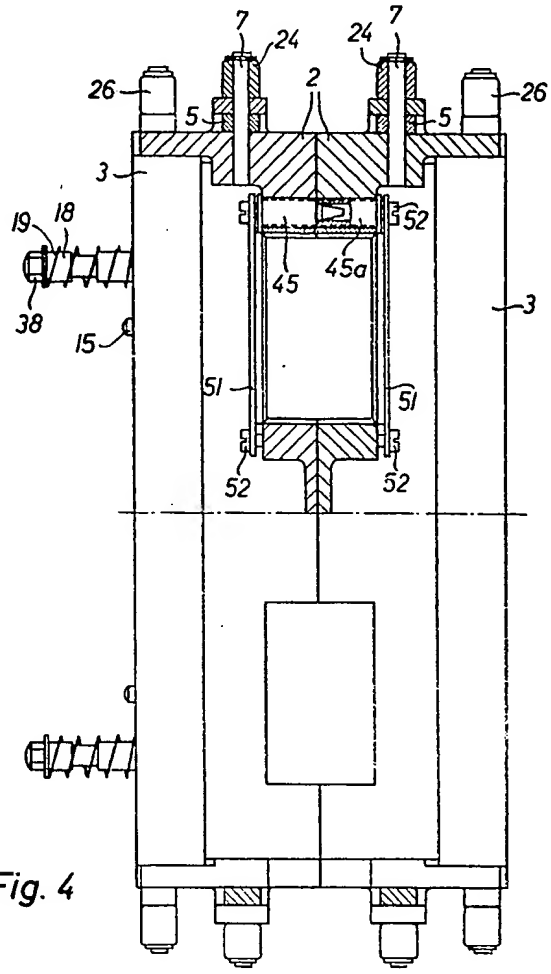

Fig. 4